

Response to SDAA Audit Question

Question Number: A-4.3-8

Receipt Date: 05/30/2023

Question:

Revise Table 4.3-2: Nuclear Design Parameters (for Equilibrium Cycle) to correct the Doppler temperature coefficient. The value presented in Table 4.3-2 shows a positive value of the Doppler temperature coefficient. NRC staff believes this is a typo. Please provide a markup correction to the FSAR.

Response:

Table 4.3-2 of the Standard Design Approval Application Final Safety Analysis Report is updated as shown in the attached markups.

Markups of the affected changes, as described in the response, are provided below:

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Table 4.3-2: Nuclear Design Parameters (for Equilibrium Cycle)

Core Average Linear Power (kw/ft)	3.9
Heat Flux Hot Channel Factor	2.196
Maximum Enthalpy Rise Hot Channel Factor	1.4
Reactivity Coefficients	
Doppler temperature coefficient (\$/F, least negative)	-2.1E-03
Doppler temperature coefficient (\$/F, most negative)	-4.6E-03
MTC (HZP-hot full power (HFP), least negative) (\$/F) ¹	0.010 to -0.010
MTC (HZP-HFP, most negative) (\$/F) ¹	-0.060 to -0.140
Boron coefficient (pcm/ppm)	-10
Effective Delayed Neutron Fraction and Prompt Neutron Lifetime	
β_{eff} BOC	0.0064
β_{eff} EOC	0.0048
Prompt lifetime BOC (10 ⁻⁵ seconds)	3.0
Prompt lifetime EOC (10 ⁻⁵ seconds)	1.0
Control Rods	
CRA requirement	Table 4.3-3
Maximum ejected rod	Section 15.4.8
Bank Worth	Figure 4.3-22 through Figure 4.3-25
Boron Concentration Limits (ppm)	
Mode 1	1900
Mode 1 (equilibrium xenon)	1400
Reduction with fuel burnup	Figure 4.3-19
Mode 2	600
Mode 3	650
Design-basis refueling ²	1900

¹ Figure 4.3-15 provides the moderator temperature coefficient as a function of power.

² No xenon is assumed for the design-basis refueling boron concentration calculation.